

Artificial Insemination and Transported Semen

by Arizona Equine Medical and
Surgical Centre • Gilbert, Arizona • (480) 962-6660

So you would like to breed your mare this year? You have done your "homework" and have located the ideal stallion for your mare. The only problem is that the mare is here in Arizona and the stallion is in Virginia. No problem! You have two options available to you, one send the mare to Virginia or the stallion owner "sends" the stallion's semen via overnight express or aircraft. Transported semen makes it possible to select and breed the finest horses regardless of geographic location. There are restrictions placed on several breeds, therefore, you need to check with your breed registry to determine if transported semen is acceptable. With assistance from your veterinarian, your mare can be bred by the stallion of your choice regardless of his location.

The first step is to determine the health of the mare's reproductive tract. These tests include a uterine culture and a uterine biopsy. The culture examines the uterus for a bacterial infection while the biopsy (a small sample of uterine lining) examines the uterus for chronic inflammation and/or scarring. Once the mare has been established as having a normal reproductive tract, the next step is to determine the mare's heat cycle.

The normal estrous cycle is 21 to 22 days. Estrus (when the mare displays heat signs) lasts 5 to 7 days and diestrus (mare is not receptive to the stallion) lasts 14 to 15 days. During estrus (heat) an egg has been "selected" to mature and be released (ovulated) into the mare's oviduct. Ovulation occurs 24 to 48 hours prior to the end of estrus. The stallion's semen ideally needs to be present prior to ovulation, allowing it to mature in the mare's uterus. Fertilization occurs in the oviduct (fallopian tube) and the embryo moves into the uterus at approximately six days of age.

Now that you have a "quick" view of the mare's heat cycle, we will explain how the veterinarian can manipulate the cycle for optimal breeding.

Three hormones which are frequently utilized to control the mare's estrous cycle are prostaglandin, progesterone and human chorionic gonadotropin (HCG). Prostaglandin and progesterone are naturally occurring compounds in the mare's reproductive tract.

Prostaglandin is released from the mare's uterus when her body determines it is not pregnant. The prostaglandin then works on her ovary to make the cycle repeat itself.

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Veterinarians frequently administer prostaglandin to shorten the length of diestrus and cause the mare to come back into heat sooner once the mare has been determined not pregnant. Progesterone is at highest levels during diestrus and is the hormone which maintains pregnancy. This hormone is used to help smooth out erratic heat cycles during the early spring months. Synchronization, or planning the mare's heat cycle, is frequently accomplished through the use of progesterone and prostaglandin. Progesterone is administered orally for 10 days followed by a prostaglandin injection. The third hormone which comes into play is the human chorionic gonadotropin (HCG). This hormone can be used to stimulate ovulation or release of the mature egg. Ovulation usually occurs 36 hours following injection of HCG.

Why all the "fuss" with all these hormones? Why not let the mare cycle on her own? The goal of all of the above hormones is to allow the veterinarian to synchronize the mare and order the semen at the appropriate time. Now that the mare is in heat, the next step is to contact the stallion owner and order the semen. The semen generally needs to be requested a minimum of 24 hours prior to when the mare needs to be inseminated. An example, the veterinarian predicts the mare will ovulate on Thursday or Friday, the veterinarian contacts the stallion owner ideally on Monday or Tuesday. The stallion owner collects the semen on Wednesday and ships it out via overnight